Appl. No. **09/590,796**
Amdt dated November 7, 2003

REMARKS/ARGUMENTS

Applicants submit that the Office Action dated July 9, 2003 is defective because it fails to articulate any bases for the rejections contained therein. For this reason the Office Action should be withdrawn, and replaced by a new non-final Office Action which properly articulates the basis for each individual rejection.

Enablement Rejections

Specifically, Claims 1-23 stand rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement of "selection software", "assignment software" and "solution software". See paragraph 2 at the bottom of page 3 and top of page 4 of the above-identified Office Action. In making these enablement rejections, the Examiner did not give any reason whatsoever for questioning the adequacy of the Applicants' originally-filed application. Instead, the Examiner merely quoted a form statement from the MPEP, without explanation its applicability to the "selection software", "assignment software" and "solution software." The Examiner did not explain why he/she thinks these particular terms are not enabled.

The Examiner's failure to provide a reason is clear error, as per MPEP 2106.01, which is quoted below (emphasis added):

> When basing a rejection on the failure of the applicant's disclosure to meet the enablement provisions of the first paragraph of 35 U.S.C. 112, the examiner must establish on the record that he or she has a reasonable **basis** for questioning the adequacy of the disclosure to enable a person of ordinary skill in the art to make and use the claimed invention without resorting to undue experimentation. See In re Brown, 477 F.2d 946, 177 USPQ 691 (CCPA 1973); In re Ghiron, 442 F.2d 985, 169 USPQ 723 (CCPA 1971). Once the examiner has advanced a reasonable basis for questioning the adequacy of the disclosure, it becomes incumbent on the applicant to rebut that challenge and factually demonstrate that his or her application disclosure is in fact sufficient.

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In view of the **failure to articulate a basis** for the rejection, Applicants submit that the enablement rejection should be withdrawn in its entirety.

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Furthermore, Applicants submit that the three terms "selection software", "assignment software" and "solution software" **do not occur anywhere in Claims 1-11, 22 and 23.** Therefore, the Examiner must withdraw the 35 U.S.C. 112 rejection of at least these claims.

In fact the only claims in which these three terms "selection software", "assignment software" and "solution software" are present are Claims 12 and 13 and their dependent claims. Assume arguendo that there is a reasonable basis for the rejection (although as noted above the Examiner's rejection lacks basis). However, Applicants submit that these three terms are in fact enabled throughout the originally filed specification.

Specifically, Claim 12 explicitly states that the "selection software" is used to select a set of active conditional equations at a current analog solution iteration (see page 11, lines 12-13). The selection software is illustrated in FIG. 1 as being implemented by act 110 (the relationship between act 110 and selection software is apparent on comparing the text in box 110 which is identical to the words of this limitation in Claim 12). Act 110 implements the summarized description in the specification at page 5 lines 15-16 and at page 7 lines 7-8. While act 110 of FIG. 1 may itself be implemented in any manner known to the skilled artisan, a detailed step-by-step implementation for one illustrative embodiment is in fact shown in FIG. 2. Each act in FIG. 2 is individually described by at least one sentence in the originally-filed specification at page 7, lines 17-23. These sentences are sufficiently enabling to a person of skill in the art.

To assess the sufficiency of enablement, it is necessary to determine the level of skill in the art for the current application. Note that the primary reference used in the prior art rejection is the IEEE Standard VHDL Analog and Mixed-Signal Extensions, Std 1076.1-1999, approved 18 March 1999. Therefore, a person skilled in the art of the current application is able to understand and write software in conformance with Std 1076.1-1999. In addition, the skilled person is sufficiently skilled to understand and apply the teachings of all references currently of record in the file history, including the articles mentioned on page 9 and at the top of page 10 of the Office Action. Moreover, such a skilled person must be able to understand and write software to implement the inventions described in each of U.S. Patents 6,532,569, 6,236,953, 5,548,539, 4,985,860, and 4,868,770 all of which were cited in paragraphs 33-37 at page 10 of the Office Action.

Therefore, at the above-described level of skill, it is easy to understand how to implement two specific steps described in the originally-filed specification at page 7, lines 17-20 as implementing the "selection software." For example, the specification states that step 205 requires the conditions that apply to the conditional equations are evaluated to determine which of the conditional equations is active (see page 7, lines 19 and 20). This sentence is easily understood (e.g. by referring to the example in Table 1 on page 3) as evaluating the conditions in an if-then-else statement. Depending on whichever condition is satisfied, one of "then" clauses of the if-then-else statement identifies the "active equation." Hence, how to identify an active equation (and by repeating this act how to identify a set of active equations) is enabled in the originally-filed specification. Applicants submit that anyone with even a minimal amount of software background should understand how to implement step 205, simply by checking which of the conditions in the "if-then-else" statement is satisfied.

Also, the specification states in line 20 on page 7 that in step 210 the active conditional equations are selected (from among all possible equations). As will be apparent at the above-described skill level, selection of any item from a set can be performed in any manner, e.g. by setting a flag or driving a signal. For this reason, a specific implementation of this step is well within routine engineering. Since each of the two steps is enabled, therefore their combination is enabled as well. For this reason, the originally-filed specification provides an enabling disclosure of the "selection software."

Although an illustrative embodiment of the "selection software" has been discussed above to demonstrate enablement, Applicants submit that Claim 12 should be interpreted more broadly than the illustrative embodiment, because Claim 12 is to be limited only by the explicit language recited for the term "selection software" in Claim 12. If prior art is found to require a narrower interpretation, then Claim 12 will be amended to appropriately recite any additional limitation that may be necessary.

In a similar manner, Applicants submit that the originally-filed specification also provides an enabling disclosure of the "assignment software." Specifically, the "assignment software" is stated in Claim 12 as being used to assign a value for each active conditional equation in the set of active conditional equations to a dynamic slot target variable. This claim limitation is illustrated by act 115 in FIG. 1 (see page 7 lines 9-10).

Act 115 may be implemented in any manner, with an illustrative embodiment shown as step 215 in FIG. 2 (described at page 7, line 21). One specific implementation of the "assignment software" is described at page 5 lines 10-14 and lines 18-23, wherein it is stated that during each iteration an unassigned variable q' is indexed by j, and assignment is done one at a time by starting j at 1 and incrementing j after each association. It is clear at the above-described skill level how to implement an association for each "j". For example, each equation (which was identified by "selection software") may be associated to a slot in an array (if an array is being used), by storing a pointer to the equation in a memory location in the array. Such a specific implementation of this step 215 is well within routine engineering at the above-described skill level.

Finally, Applicants submit that the originally-filed specification also provides an enabling disclosure of the "solution software." Specifically, the "solution software" is stated in Claim 12 as being used to solve the system of simultaneous equations. This claim limitation is illustrated by act 120 in FIG. 1 (see page 7 lines 11-12). Act 120 may be implemented in any manner, with an illustrative embodiment shown as step 220 in FIG. 2 (described at page 7, line 22). One specific implementation for solving simultaneous equations is described at page 6 lines 2-9 wherein variables are described as being substituted into the equations to see if the equations are solved, and if not solved then the values are perturbed until a solution is reached. As noted at lines 8-9 on page 6, the solution of simultaneous equations is so well known within routine engineering that it is not described any further. Methods for solving a system of equations can be found in most undergraduate textbooks on numerical mathematics.

In view of the above, Applicants submit that all three terms "selection software", "assignment software" and "solution software" are enabled and therefore the enablement rejection of Claims 12 and 13 and their dependent claims should be withdrawn even if the Examiner had articulated a basis for the rejection.

In addition, Claims 22-23 were rejected as failing to comply with the enablement of "translation software." See paragraph 3 at the top of page 4 of the Office Action. Once again the Examiner merely quoted a form statement from the MPEP, without explanation its applicability to the "translation software". The Examiner did not explain why he/she thinks "translation software" is not enabled, and as noted above such failure to articulate a

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basis is clear error. Assuming there was a basis for the rejection, Applicants submit that the translation software is explicitly described in Claim 22 as being used to translate the hardware description language description into a system of simultaneous equations (see page 13, lines 8-9). Translation of a HDL description into a system of simultaneous equations is illustrated in box 435 in FIG. 4 and further described in the specification at page 8, lines 10-12. Applicants submit that this description is sufficiently enabling in view of the above-described skill level. Therefore, the enablement rejection of Claims 22 and 23 should be withdrawn.

That such translators are well known in the art is further evident from the fact that the USPTO has granted to the same inventors another patent, namely US Patent 6,532,569 (compare FIG. 3 therein with FIG. 4 of the current application). Note that the translation software was described there in terms similar or identical to the current application.

To summarize, all of four "softwares" mentioned above are believed to be enabled in the originally-filed application. If the Examiner continues to make the enablement rejection, the Examiner must identify sufficient factual evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any experimentation that may be needed is "undue" based on the numerous factors specified in MPEP 2164.01 (a). Moreover, as stated in MPEP 2164.04 (emphasis added) the Examiner's language:

> should focus on those factors, reasons, and evidence that lead the examiner to conclude that the specification fails to teach how to make and use the claimed invention without undue experimentation. This can be done by making **specific findings of fact, supported by the evidence, and then drawing conclusions based on these findings of fact.** For example, doubt may arise about enablement because information is missing about one or more essential parts or relationships between parts which one skilled in the art could not develop without undue experimentation. In such a case, the examiner should specifically identify what information is missing and why one skilled in the art could not supply the information without undue experimentation.

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In accordance with the principles of compact prosecution, if an enablement rejection is appropriate, the **first Office action on the merits should present the best case with all the relevant reasons, issues, and evidence** so that all such rejections can be withdrawn if applicant provides appropriate convincing arguments and/or evidence in rebuttal. Providing the best case in the first Office action will also allow the second Office action to be made final should applicant fail to provide appropriate convincing arguments and/or evidence. Citing new references and/or expanding arguments in a second Office action could prevent that Office action from being made final. The principles of compact prosecution also dictate that if an enablement rejection is appropriate and the examiner recognizes limitations that would render the claims enabled, the examiner should note such limitations to applicant as early in the prosecution as possible.

In other words, **the examiner should always look for enabled, allowable subject matter and communicate to applicant what that subject matter** is at the earliest point possible in the prosecution of the application.

Applicants submit that in view of the high level of skill (based on the references of record), the disclosure is adequate and if any experimentation is required, the experimentation is routine. As stated in MPEP 2106, "The fact that experimentation is complex, however, will not make it undue if a person of skill in the art typically engages in such complex experimentation."

Prior Art Rejections

Claims 1-23 stand rejected as being clearly anticipated by IEEE Std 1076.1-1999, March 18, 1999 (hereinafter "IEEE"). In making the rejection, the Examiner merely cited to pages 134-140, Section "9.5 Concurrent Signal Assignment Statements." The Examiner did not provide any explanation whatsoever for making the anticipation rejection. Instead, the Examiner **repeatedly cited the same seven pages again and again for each of several different limitations** in Claim 1. See the rejection of Claim 1 in the top half of page 5 of the Office Action. The Examiner did not identify with specificity the precise location within these seven pages as to where he/she thinks each individual particular

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limitations is found. In view of the **failure to articulate a basis** for the rejection, Applicants submit that the anticipation rejection of Claim 1 should be withdrawn in its entirety.

Assume arguendo that there is a reasonable basis for the anticipation rejection (although as noted above the Examiner's rejection lacks basis). However, Applicants submit that none of the limitations of Claim 1 are found anywhere in the entirety of the cited portion of the reference, namely the seven pages 134-140 in IEEE Section 9.5. The reason that none of the claimed limitations can be found in IEEE is because **IEEE is a standard which merely says what needs to be done, without saying how to do it**. In contrast, Claim 1 recites specific acts to be performed, i.e. how to do something.

When the acts of Claim 1 are performed, certain embodiments of the invention conform to IEEE Section 15, pages 225-230. Note that this section 15 now being identified by Applicants is quite different from the section 9.5 cited by the Examiner. In view of the above-mentioned absence of an explanation for the rejection, it is unclear why the Examiner found pages 134-140 in IEEE Section 9.5 to be relevant. The Examiner appears to have correctly interpreted the functionality related to the invention in paragraph 3 on page 2 of the Office Action wherein the Examiner identified the functionality as "simultaneous statements". This very term "simultaneous statements" is found in the title of IEEE Section 15 on page 225. Yet the Examiner cited to IEEE Section 9.5 page 134 which has a very different title, namely "Concurrent Signal Assignment Statements." If the Examiner continues the rejection, Applicants respectfully request the Examiner to clarify the record, so that an appropriate response can be filed.

Moreover, the Examiner is respectfully requested to carefully evaluate the relevance of IEEE Section 15 to the claimed invention, in view of the above remark regarding the difference between a specification (of what needs to be done) and an implementation (of how to do it). In this context, Applicants note that a user may write a model (of simultaneous statements) that conforms to IEEE Section 15. How a given model performs (e.g. how quickly it operates or how much memory it uses) depends on the tool that is used to execute the model. Applicants submit that tools that perform the acts of Claim 1 implement an invention that is novel and non-obvious and worthy of patent protection. **Applicants are not attempting to patent the IEEE standard**, but instead Claim 1 is

directed to specific acts to be performed (which implement the standard in some embodiments).

In evaluating the relevance of IEEE, Applicants submit that the combination of acts recited in Claim 1 is neither disclosed nor suggested by IEEE Section 15, pages 225-230, or for that matter any other portion of IEEE Std 1076.1-1999. Nor for that matter does Claim 1 cover all possible ways in which IEEE Std 1076.1-1999 can be implemented. For example, Claim 1 explicitly requires assigning a value for the active conditional equation to a **dynamic** slot target variable at the **current** analog solution **iteration**. Therefore, if another method were to use a static assignment scheme, in which slot assignments are unchanged regardless of the iteration, then such a method is not covered by Claim 1 but the method could yet be in compliance with IEEE Section 15, pages 225-230. [Ernst: **Please confirm this is TRUE – we are agreeing that such a method will avoid patent infringement**] Applicants note that neither a static assignment scheme nor a dynamic assignment scheme is disclosed in IEEE, because as noted above IEEE is merely a standard that does not describe any implementations.

To summarize, none of the limitations of Claim 1 is believed to be described in IEEE. If the Examiner continues to make the anticipation rejection, the Examiner must provide a pinpoint citation for each claim limitation so that Applicants can respond appropriately. In considering the prior art, the Examiner is requested to understand the **dynamic** assignment invented by Applicants, wherein an **assignment** occurs **in the current iteration** (see page 9, lines 10-12 and act 115 discussed above in relation to the "assignment software"). The need for an Examiner to consider what Applicants have invented, is stated in MPEP 2106 which is reproduced below in pertinent part (emphasis added):

II.   DETERMINE WHAT APPLICANT HAS INVENTED AND IS SEEKING TO PATENT

It is essential that patent applicants obtain a prompt yet complete examination of their applications. ... Deficiencies should be explained clearly, particularly when they serve as a basis for a rejection. Whenever practicable, Office personnel should **indicate how rejections may be overcome** and how problems may be resolved. A failure to

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follow this approach can lead to unnecessary delays in the prosecution of the application.

Prior to focusing on specific statutory requirements, Office personnel must begin examination by **determining what, precisely, the applicant has invented** and is seeking to patent, and how the claims relate to and define that invention. (As the courts have repeatedly reminded the Office: "The goal is to answer the question 'What did applicants invent?' " In re Abele, 684 F.2d 902, 907, 214 USPQ 682, 687. Accord, e.g., Arrhythmia Research Tech. v. Corazonix Corp., 958 F.2d 1053, 1059, 22 USPQ2d 1033, 1038 (Fed. Cir. 1992).) ...

In determining what has been invented, the Examiner is requested to take into account the entirety of the originally-filed application. In view of the above remarks, Applicants submit that the anticipation rejection of Claim 1 should be withdrawn. Claim 1 is therefore patentable over the prior art of record.

Claims 2-23 were rejected for the very same reasons as Claim 1, and are believed to be patentable also for the above discussed reasons.

In rejecting Claims 2-23, the Examiner made no attempt whatsoever to precisely cite individual portions of IEEE that the Examiner thinks are more relevant to one claim as opposed to another claim. If the Examiner believes that all these claims have the same scope (despite their individual limitations) then the Examiner must explain the basis for such belief. For example, Claim 3 (which depends from Claim 2) explicitly recites the acts to be done at a second iteration (including an additional act of assigning).

For the above reasons, Applicants respectfully request allowance of all Claims 1-23. Should the Examiner have any questions concerning this response, the Examiner is invited to call the undersigned at (408) 982-8200, ext. 3.

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Respectfully submitted,

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